

SYSTEM OF SUPER SUPER DECOUPLED LOADFLOW CALCULATION FOR ELECTRICAL POWER SYSTEM

ABSTRACT

A method of performing loadflow calculations for controlling voltages and power flow in a power network by reading on-line data of given/specified/scheduled/set network variables/parameters and using control means, so that no component of the power network is overloaded as well as there is no over/under voltage at any nodes in the network following a small or large disturbances. The invented generalized Super Super Decoupled Loadflow (SSDL) calculation method is characterized in that 1) modified real power mismatch at any PQ-node-p is calculated as $RP_p = [\Delta P_p' + (G_{pp}'/B_{pp}') \Delta Q_p'] / V_p^2$, which takes different form for different manifestation of the generalized version SSDL-X'X' method, 2) transformed values of known/given/specified/scheduled/set quantities in the diagonal elements of the gain matrix [YV] of the Q-V sub-problem are present, and 3) transformation angles are restricted to maximum of -48° particularly for the most successful version SSDL-YY method, and these inventive loadflow calculation steps together yield some processing acceleration and consequent efficiency gains, and are each individually inventive. The other two Super Super Decoupled Loadflow methods: BGX' version (SSDL-BGX') and $X'G_{pv}X'$ version (SSDL-X'G_{pv}X') are characterized in the use of simultaneous (1V, 1θ) iteration scheme thereby calculating mismatches only once in each iteration and consequent efficiency gain.